

## PATENT CLAIMS

1           1. Nucleic acids coded for a deregulated 3-phospho-  
2 glycerate dehydrogenase containing a gene *serA* according to SEQ ID  
3 No. 1 or an allele, homolog or derivative of this nucleotide  
4 sequence or a nucleotide sequence hybridizing therewith.

1           2. Nucleic acids coding for a deregulating 3-  
2 phosphoglycerate dehydrogenase containing a gene *serA* according to  
3 SEQ ID No. 2 or an allele, homolog or derivative of this nucleo-  
4 tide sequence or a nucleotide sequence hybridizing therewith.

1           3. Nucleic acids coding for a deregulating 3-  
2 phosphoglycerate dehydrogenase containing a gene *serA* according to  
3 SEQ ID No. 3 or an allele, homolog or derivative of this nucleo-  
4 tide sequence or a nucleotide sequence hybridizing therewith.

1           4. Nucleic acids coding for a deregulating 3-  
2 phosphoglycerate dehydrogenase containing a gene *serA* according to  
3 SEQ ID No. 4 or an allele, homolog or derivative of this nucleo-  
4 tide sequence or a nucleotide sequence hybridizing therewith.

1           5. Nucleic acids coding for a deregulating 3-  
2 phosphoglycerate dehydrogenase containing a gene *serA* according to  
3 SEQ ID No. 5 or an allele, homolog or derivative of this nucleo-  
4 tide sequence or a nucleotide sequence hybridizing therewith.

5           REPLACEMENT SHEET (RULE 26)

1           6. Nucleic acids according to one of claims 1 to 5  
2 characterized in that they are isolated from coryneform bacteria.

1           7. Nucleic acids according to one of claims 1 to 6  
2 characterized in that they are isolated from *Corynebacterium* or  
3 *Brevibacterium*.

1           8. Nucleic acids according to one of claims 1 to 7  
2 characterized in that they are isolated *Corynebacterium glutamicum*  
3 or *Brevibacterium flavum*.

1           9. A gene structure containing at least one of the  
2 nucleotide sequences according to claims 1 to 8 as well as  
3 regulatory sequences operatively linked therewith.

1           10. A vector containing at least one nucleotide se-  
2 quence according to claims 1 to 8 or a gene structure according to  
3 claim 9 as well as additional nucleotide sequence for selection,  
4 replication in the host cell or for interaction in the host cell  
5 genome.

REPLACEMENT SHEET (RULE 26)

1           11. A deregulated 3-phosphoglycerate-dehydrogenase or a  
2 part thereof loaded by means of a nucleic acid sequence according  
3 to one of the claims 1 to 8.

1           12. A deregulated 3-phosphoglycerate-dehydrogenase  
2 according to claim 11 with an amino acid sequence according to SEQ  
3 ID No. 7 or a modified form of this polypeptide sequence or  
4 isoform thereof.

1           13. A deregulated 3-phosphoglycerate-dehydrogenase  
2 according to claim 11 with an amino acid sequence according to SEQ  
3 ID No. 8 or a modified form of this polypeptide sequence or isoform  
4 thereof.

1           14. A deregulated 3-phosphoglycerate-dehydrogenase  
2 according to claim 11 with an amino acid sequence according to SEQ  
3 ID No. 9 or a modified form of this polypeptide sequence or isoform  
4 thereof.

1           15. A deregulated 3-phosphoglycerate-dehydrogenase  
2 according to claim 11 with an amino acid sequence according to SEQ  
3 ID No. 10 or a modified form of this polypeptide sequence or  
4 isoform thereof.

Replacement Sheet (Rule 26)

1           16. A deregulated 3-phosphoglycerate-dehydrogenase  
2 according to claim 12 with an amino acid sequence according to SEQ  
3 ID No. 11 or a modified form of this polypeptide sequence or  
4 isoform thereof.

1           17. A polypeptide according to one of claims 11 to 16  
2 characterized in that it derives from coryneform bacteria.

1           18. A polypeptide according to one of the claims 11 to  
2 17 characterized in that it derives from *Corynebacterium* or  
3 *Brevibacterium*.

1           19. A polypeptide according to one of the claims 11 to  
2 18 characterized in that it derives from *Corynebacterium glutamicum*  
3 or *Brevibacterium flavum*.

1           20. A microorganism containing at least one nucleic acid  
2 according to claims 1 to 8 in replicatable form and which by  
3 comparison with the wild type microorganism is expressed in an  
4 amplified manner and/or has its copy number increased.

1           21. A microorganism according to claim 20 containing in  
2 replicable form a gene structure according to claim 9 or a vector  
3 according to claim 10.

Replacement Sheet (Rule 26)

1           22. A microorganism according to one of the claims 20 to  
2 21 containing at least one polypeptide according to claims 11 to  
3 19 which, by comparison to the corresponding wild type line shows  
4 an active deregulated 3-phosphoglycerate-dehydrogenase.

1           23. The microorganism according to one of the claims 20  
2 to 22 characterized in that it is a Coryneform bacterium.

1           24. The microorganism according to one of claims 20 to  
2 23 characterized in that it belongs to the familia Corynebacterium  
3 or Brevibacterium.

1           25. The microorganism according to one of claims 20 to  
2 24 characterized in that it belongs to *Corynebacterium glutamicum*  
3 or *Brevibacterium flavum*.

1           26. A probe for identifying and/or isolating genes coded  
2 for proteins participating in the biosynthesis of L-serine charac-  
3 terized in that they are made starting from nucleic acids according  
4 to one of the claims 1 to 8 and containing a marker suitable for  
5 detection.

Replacement Sheet (Rule 26)

1           27. The method for microbial production of L-serin  
2 characterized in that

3           a) at least one nucleic acid according to one of the  
4 claims 1 to 8 is isolated from a coryneform bacterium and is  
5 translated in a microorganism and there expressed, whereby the gene  
6 expression and/or the activity of the corresponding coded  
7 polypeptide is increased with respect to the corresponding  
8 microorganism which has not been genetically altered;

9           b) this genetically modified microorganism from step a)  
10 is used for microbial production; and

11           c) the correspondingly formed L-serine is isolated from  
12 the culture medium.

Replacement Sheet (Rule 26)